



Forest Health Protection Pacific Southwest Region



Date: August 7, 2009
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To: Forest Supervisor, Mendocino National Forest

Subject: Insect and disease evaluation of rust resistant sugar pines for Chad Atwood
(FHP Report N09-13)

At the request of Chad Atwood, Culturist (Mendocino NF, Upper Lake RD), Cynthia Snyder, Forest Health Protection (FHP) Entomologist and Pete Angwin, FHP Plant Pathologist, conducted a field evaluation of identified rust resistant sugar pines on September 1, 2009. The objective of the visit was to evaluate the current forest health conditions of the trees, discuss what influence these conditions have on management objectives and provide recommendations as appropriate.

Background

The Mendocino National Forest has proposed approximately 9 acres of thinning and fuel reduction around 9 identified rust resistant sugar pine trees. These naturally growing trees were identified in the early 1980s and permanently tagged as confirmed rust resistant in 1984. Two of the trees are considered old-growth at greater than 300 years old; the others are between 100 and 150 years. A large effort was put forth to identify sugar pine which show resistance to white pine blister rust making these trees extremely valuable to the Mendocino National Forest and Region 5.

Treatments are planned to pick up where previous work left off in terms of thinning and squirrel banding to help promote and protect future cone crops for collection. Thinning would reduce competition, increase individual tree vigor and reduce possible sources or vectors for disease. The planned treatment also includes raking accumulated duff from around the 9 trees to reduce the risk of fire related damage and mortality. Disposal of fallen cones and the repair or replacement of squirrel banding is also in the treatment plan.

Observations

These are mature sugar pines (24+ inches DBH) with very dense stands of mixed conifer and hardwoods surrounding them (Figures 1 and 2). One tree has an adjacent

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knobcone pine (*Pinus attenuata*) with western gall rust (*Endocronartium harknessii*) which is infecting the lower canopy of the resistant sugar pine.

Other treatments planned for but not being submitted for FHP funding include raking the duff from around the rust resistant sugar pines, repairing or replacing squirrel banding and collecting fallen cones.

Seed collection is the primary reason to protect these trees. Several cones were cut to look for insect damage and damage by sugar pine cone beetle (*Conophthorus lambertiana*) was low to moderate in those cut open (Figure 3). Disposal of old cones is considered to have very limited effect in controlling sugar pine cone beetle, however, on such a small scale and with few surrounding sugar pines, this treatment may have a much greater effect protecting new cones from infestation than seen in seed orchards where most studies have been done. Also some of these trees had squirrel banding which is in need of repair or removal as some of it has created open wounds in the trees or adjacent trees potentially stressing or girdling them (Figure 4). The thick layer of duff surrounding the trees is a result of accumulated bark exfoliated from the trees. This fuel hazard causes increased risk of fire related damage and mortality in sugar pines. Raking has shown some success in protecting high value trees from damage and mortality in a fire event.



Figure 1. Dense vegetation surrounding rust resistant sugar pine.



Figure 2. Dense vegetation surrounding rust resistant sugar pine.



Figure 3. Rust resistance sugar pine cone (inset of cut open cone with no sugar pine cone beetle damage).



Figure 4. Squirrel banding detaching from rust resistant sugar pine.

Discussion and Recommendations

The stands surrounding the rust resistant sugar pines are becoming very dense, and the risk to attack by mountain pine beetle (*Dendroctonus ponderosae*) is increasing fast. The risk to crown fire and mortality from drought is likewise increasing. These trees represent a valuable resource to the Forest and the Region and I support the District plan to thin around these trees.

If you have any questions regarding this report and/or need additional information please contact Cynthia Snyder at 530-226-2437 or Pete Angwin at 530-226-2436.

/s/ Cynthia Snyder

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cc: Nancy Mulligan, Nancy Gard, Chad Atwood, Pete Angwin, Sheri Smith, Julie Lydick and Phil Cannon